

L6 ANSWER 1 OF 1 SCISEARCH COPYRIGHT 1998 ISI (R)
ACCESSION NUMBER: 90:76161 SCISEARCH
THE GENUINE ARTICLE: CL594
TITLE: FORCE MICROSCOPE WITH CAPACITIVE DISPLACEMENT
DETECTION
AUTHOR: GODDENHENRICH T (Reprint); LEMKE H;
HARTMANN U; HEIDEN C
CORPORATE SOURCE: KFA JULICH GMBH, INST THIN FILM & ION TECH, POB
1913, W-5170 JULICH 1, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A-VACUUM
SURFACES AND FILMS, (1990) Vol. 8, No. 1, pp.
383-387.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS; ENGI
LANGUAGE: ENGLISH
REFERENCE COUNT: 14
CATEGORY: PHYSICS, APPLIED
RESEARCH FRONT: 90-0502 004; SCANNING TUNNELING MICROSCOPY;
ANOMALOUS FORCE DEPENDENCE; ATOMIC POSITIONS

REFERENCE(S):

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (R WK)
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L3 ANSWER 1 OF 5 SCISEARCH COPYRIGHT 1998 ISI (R)
 ACCESSION NUMBER: 91:130391 SCISEARCH
 THE GENUINE ARTICLE: EZ923
 TITLE: A NEW FORCE SENSOR INCORPORATING FORCE-FEEDBACK
 CONTROL FOR INTERFACIAL FORCE MICROSCOPY
 AUTHOR: JOYCE S A (Reprint); HOUSTON J E
 CORPORATE SOURCE: SANDIA NATL LABS, ALBUQUERQUE, NM, 87185 (Reprint)
 COUNTRY OF AUTHOR: USA
 SOURCE: REVIEW OF SCIENTIFIC INSTRUMENTS, (1991)
 Vol. 62, No. 3, pp. 710-715.
 DOCUMENT TYPE: Article; Journal
 FILE SEGMENT: PHYS; ENGI
 LANGUAGE: ENGLISH
 REFERENCE COUNT: 26

ABSTRACT:
 A new interfacial-force microscope capable of measuring the forces between two surfaces over the entire range of surface separations, up to contact, is described. The design is centered around a differential-capacitance displacement sensor where the common capacitor plate is supported by torsion bars. A force-feedback control system is incorporated which balances the interfacial forces at the sensor, maintaining the common capacitor plate at its rest position. This control therefore eliminates the instability or "jumping" which occurs with conventional cantilever-based force sensors when the attractive force gradient between the fixed sample and sensor exceeds the mechanical stiffness of the cantilever. The operating characteristics of the sensor and its ability to measure interfacial forces using the feedback control at surface separations smaller than this instability point are demonstrated.

CATEGORY: PHYSICS, APPLIED; INSTRUMENTS & INSTRUMENTATION
 SUPPL. TERM PLUS: ATOMIC-SCALE FRICTION; TUNGSTEN TIP; SURFACE
 RESEARCH FRONT: 91-0497 003; ATOMIC FORCE MICROSCOPY; ELASTIC TIP
 SURFACE INTERACTIONS; IMAGING NANOMETER SCALE
 DEFECTS IN LANGMUIR-BLODGETT-FILMS
 91-4102 001; SURFACE FORCES; ADSORBED LAYERS;
 ELECTROSTATIC INTERACTION; AQUEOUS
 ETHYL(HYDROXYETHYL)CELLULOSE SOLUTIONS

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